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M/035/015

TONY'S COMMENTS ON KUC TAILINGS SURETY ESTIMATE
December 18, 1995

Note: paraphrased comments from phone conversation with Bob Dunn on 12/15/95 in italicized print

-These comments apply to the KUC reclamation estimate in the fax copy of Oct. 6, 1995.

-DOGM assumes the entire embankment (967 acres measured by DOGM on Reclamation Plan - Drawing 4710-72-072) will be drill seeded and the tree clusters (199 acres) then planted over the area.

-KUC calculation sheet section 02 ADBR1 Geotextile for Dike Roads, SY figures for Dike 6 = 11.1 acre, Dike 7=11.1 acre, Dike 8= 8.7 acre. DOGM measurements from the Reclamation Plan are Dike 6= 12.3 acre, Dike 7= 14.5 acre Dike 8=18.3 acre. Explain this discrepancy.
The plan is not for the geotextile to cover the entire surface of the dikes, just enough to create a road base, then other material can be used to construct the road/dike.

-KUC calculation sheet section 05 AHAB Reclamation Rangeland Drl. Comparison of the figures used in the calculation sheet with the values measured off the Reclamation Plan Drawing. Area VI =115 acres on the calculation sheet; measured by DOGM 139 acres. Area VIII =115, measured by DOGM =132. Areas VII & IX =115 acres, measured by DOGM = 162 acres. Were aceages used in the calculation sheet measured off the Reclamation Plan Drawing?
If you look at the overall total of the areas receiving this treatment it doesn't appear to differ greatly. Maybe what we (KUC) need to do is provide a description of our reclamation practices. For example by drill seeding we mean ... ... YES, sounds like a good idea.

-KUC calculation section 06 AHAC Reclamation 2-Phase HYDRO. Again comparison of areas in calculation sheet compared with areas measured off the Reclamation Plan Drawing. Area VI =30 acre, DOGM measured 70 acre. Area VIII =30 acre, DOGM measured 52 acre. Area VII & IX = 30 acre, DOGM measured 84.6+27.3 = 111.9 acre.
Same as comment on section 05 AHAB.

-KUC calculation section 07 AHAB Reclamation LGP Hydroseed Recl Type I Drill Seeding. Again areas in calculation sheet compared with areas measured off the Reclamation Plan Drawing. Area VI= 921 acres, DOGM measured 750 acres. Area VIII= 921 acres, DOGM measured 758 acres. Area VII & IX= 921 acres, DOGM measured 1,107 + 181 = 1,288 acres. In this case the measured areas are less than those shown in the calculation sheet. Because these are listed in the calculation sheet as 3 equal areas it appears that a general assumption was made (before the drawing was made) that we'll have 3 regions, so let's just assume they are all equal. Please explain this discrepancy.
Bob will look into this, although if the totals are in agreement, it shouldn't be a big issue.

-KUC calculation sheet section 10 AHA Removal of Bldgs, P.Hses. The first estimate just provided a lump sum for this. The second version provided a cubic foot total and unit cost. Please provide a summary listing of the structures included. A general listing such as " 25 pumphouses, typical 30' w x 30' l x 10' h, concrete pad, sheet metal bldg" would be acceptable.
Ok, we can work on that - you realize this is all 20 years in the future and you want us to provide an itemized list.

-KUC calculation sheet 11 AHAB Removal & Reclamation of Roads. This section of the sheet lists 35 acres of roads. What is the source of this data? The previous estimate included an amount for road reclamation of $334 (thousands of dollars) and the new 35 acre version is $97. This is a significant change. What design changes were made to cause this? Also, area Xc of the Reclamation Plan Drawing includes roads, pipelines & bridges, but this area is not specifically referenced in the KUC calculation sheet. Was this area included under some other heading or was the omission intentional because this area is on the existing impoundment?
KUC did modify their designs, but Bob will have someone check into how this figure was arrived at.

-KUC calculation sheet section 14 AHAJ Lime Treatment Reclamation (Soil Treatment) lists 1 lot at $220,000. KUC's written response indicates this is an application rate of 50 tons/acre on 10% of the embankment area at an average cost of $2,100/acre. If the Acidification Report estimates that up to 35% of the embankment could go acid, DOGM would like this worst case scenario to be included, i.e. apply this treatment to 35% of the embankment.
Bob believes the 10% figure was agreed upon at a meeting with DOGM. He is not sure which meeting, but believes Wayne was present. OK, this may be a subject for more discussion. Tony will mention it to Wayne.

TONY NOTES ON LIME TREATMENT
$220,000/$2,100 per acre = 104.8 acres
If 104.8 acres = 10% of the embankment, then the embankment is 1,047.6 acres
The area measured of the Reclamation Plan Drawing for area Xc= 967 acres.
Using KUC's embankment area, 35% of 1,048 acres = 366.8 acres
If we assume we are treating a 1 foot depth of this 35% then the volume of soil = 15,977,808 ft^3

IF we back-calculate from KUC's figures of 10% of the area and 50 tons/acre application rate we can arrive at the approximate ABA value they used.
assume they are treating the top 1 foot depth
assuming the tailings material has a density comparable to dry loose sand =2,400 lb/yd^3
assuming crushed limestone has a density of 2,600 lb/yd^3 or 1.3 ton/yd^3
50 tons limestone/acre of tailings 1 foot deep
tonnage of tailings= (43,560 $ft^{2)}$ x (1 ft depth) x (1 $yd^3/27\ ft^3$) x (2,400 lb/yd^3) x (1 ton/2,000 lb)
vol of tailings = 1,936 tons; One kton = 1,000 tons

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(50 tons limestone)/(1,936 tons tailings) = (50 tons)/(1.936 kton) = (25.8 ton)/(kton)
therefore, the implied ABA for the 50 tons/acre application is -25.8 ton/kton

At 50 tons/acre how thick will the limestone be on the surface?
(50 tons/acre) x(1 yd^3/1.3 ton) x (27 ft^3/1 yd^3) x (1 acre/ 43560 ft^2) = 0.0238 ft deep= 0.29 inch

IF we treat 35% of the total new embankment (1,048 acre) with lime at 50 tons/acre at a unit cost of $2,100 per acre, what is the new line item total?
(0.35) x (1,048 acre) x ($2,100/acre) = $770,280

MULCH COMMENT RELAYED TO KUC
-The KUC calculation sheet did not include any mulch application. The tailings material is essentially sterile and devoid of organic material. DOGM believes mulch should be added to the embankment to increase the organic content. KUC states they wish to revegetate the new embankment in the same manner as the old. Lynn requested information describing the revegetation of the existing impoundment, but this has not yet been received. The application rate for alfalfa mulch would be 8-10 tons/acre.
KUC did not include mulch because they have not used mulch in the revegetation of the existing impoundment. Bob will look into this revegetation report that Lynn asked about. KUC does not want to add mulch.

TONY NOTES ON MULCH APPLICATION
IF alfalfa mulch is added to the new embankment at a rate of 10 tons/acre at a cost of $80/ton of mulch and $200 for application costs, i.e. total cost of $1,000 per acre, the line item amount would be 1,048 acres x $1,000/acre = $1,048,000 or $1.048 million.